

NAVSTA NORVA INSTRUCTION 5100.1A

Subj: HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO)

Ref: (a) Hazards of Electromagnetic Radiation to Ordnance
Assessment of Naval Station Norfolk Survey of
Jan 02
(b) NAVSEA OP 3565/NAVAIR 16-1-529, Vol. 2 (Series)
(c) OPNAVINST 5100.23 (Series)
(d) NAVFAC 11010/31 Parts I and II
(e) NAVMEDCOMINST 6470.2 (Series)

Encl: (1) Ordnance Operation Areas and Ordnance Transportation
Routes
(2) Applications for Setting HERO Conditions
(3) HERO Emission Control (EMCON) Procedures
(4) Safe Separation Distances for Station

1. Purpose. To promulgate policy and procedures for safe handling, transportation, and stowage of ordnance with regard to HERO at Naval Station (NAVSTA) Norfolk, Virginia.

2. Cancellation. NAVSTANORVAINST 5100.1.

3. Background. This instruction is applicable anytime HERO SUSCEPTIBLE or HERO UNSAFE ORDNANCE is handled, loaded, or transported by NAVSTA Norfolk at all ordnance locations and provides specific guidance germane to the emitter systems at NAVSTA Norfolk in order to mitigate the concern for HERO. Reference (a) contains the HERO EMCON procedures. The standard HERO precautions are listed in paragraph 8. Reference (b) provides a list of all ordnance and emitters to include safe operating distances for emitters. The HERO zones for the station are illustrated in enclosure (1). Enclosures (2) and (3) provide both applications and procedures for the setting of HERO EMCON. Enclosure (4) provides HERO separation distances for small craft, portable, and mobile transmitters. Reference (c) establishes general guideline for safety ashore.

4. General Discussion. As described in reference (b), Electromagnetic Radiation (EMR) hazards stem from the functional characteristics of electrically initiated ordnance, and are a result of absorption of electromagnetic energy by the firing circuitry of Electrically Initiated Devices (EID's). The induced energy can cause heating of the bridge wire and primary explosive, and can result in premature, unintended actuation of the EID. Such an event can pose either a safety or reliability problem. In general, ordnance is most susceptible to radio frequency EME's during assembly, disassembly, handling, loading, and unloading. There are three classifications pertinent to HERO: HERO SAFE ORDNANCE, HERO SUSCEPTIBLE ORDNANCE, and HERO UNSAFE ORDNANCE. Therefore, HERO EMCON and ordnance handling restrictions and procedures form a compromise which allows for the safe handling of ordnance within the existing Electromagnetic Environment (EME). EMCON is derived from an analysis of the EME's produced by the existing transmitter/antenna systems and the ordnance susceptibilities described in reference (b), or through a HERO survey. The following paragraphs describe the categories of ordnance.

a. HERO SAFE ORDNANCE. Items that require no EME restrictions beyond the general HERO requirements described in Chapter 5 of reference (b).

b. HERO SUSCEPTIBLE ORDNANCE. Items that are susceptible and require moderate EME restrictions.

c. HERO UNSAFE ORDNANCE. Items that are extremely susceptible and require severe EME restrictions.

5. Responsibilities

a. Commanding Officers/Officers-in-Charge and Department Heads/Special Assistants

(1) Ensure that all operators of communications equipment, radar, and microwave systems comply with this instruction.

(2) Ensure that personnel operating transmitters are properly instructed in their use during EMCON conditions.

(3) Notify the Explosive Safety Officer (ESO), the Frequency Manager, and the HERO Officer prior to installing or

changing transmitters and antennas at NAVSTA Norfolk. Reference (d) must be submitted to NAVFAC MIDLANT and approved by Naval Ordnance Safety and Security Activity (NOSSA) prior to installation.

(4) Promulgate supplementary instructions pertaining to their own equipment, personnel, and operating procedures as required for compliance with this instruction.

b. Handling Command Ordnance Officers. Duties include, but are not limited to:

(1) Ensure that all ordnance personnel are familiar with HERO restrictions applicable to ordnance operations.

(2) When issuing any ordnance (or ordnance component) to a user, advise the user of its HERO status during all aspects of its life cycle (i.e., transportation, storage, assembly, handling, and loading operations).

(3) Inform the HERO Officer upon receipt of ordnance items that are categorized as HERO SUSCEPTIBLE or HERO UNSAFE ORDNANCE so that HERO issues can be mitigated to ensure both safety and reliability.

(4) Ensure that HERO UNSAFE and HERO SUSCEPTIBLE ORDNANCE are enclosed in all-metal containers during transport. (When transported in sealed, all-metal containers, such ordnance is considered HERO SAFE.) If HERO SUSCEPTIBLE ORDNANCE is transported outside a sealed, all-metal container, observe the HERO separation distances listed in enclosure (4) for small craft, portable, and mobile transmitters. In the event of an ordnance accident, set the appropriate HERO condition for HERO UNSAFE ORDNANCE.

(5) Place HERO warning signs prohibiting radio transmissions at the entrance to the magazine area and all ordnance handling or storage activities.

c. Explosive Safety Officer (ESO). The ESO acts as the compliance officer and staff advisor to the Commanding Officer. His/her duties include, but are not limited to:

(1) Ensuring a map is maintained that indicates the location of all RF transmitters that could effect the safety of the ordnance operation.

(2) Maintaining a file of all active HERO EMCON bills for NAVSTA Norfolk.

(3) Reviewing reference (d), submitted to request new or modified emitters systems, and forwarding submissions through NAVFAC to NOSSA for approval. Contacts Naval Surface Warfare Center, Dahlgren Division (J52) for all questions concerning HERO.

d. HERO Officer

(1) NAVSTA NORFOLK HERO Officer will be assigned in writing and will be a NAVSTA NORFOLK Officer.

(2) Be responsible for a continuing program to ensure HERO safety at NAVSTA Norfolk.

(3) Convene an annual conference of ordnance and radiation hazard (RADHAZ) personnel who are representative of each unit or organization to discuss and recommend changes to these instructions.

(4) Monitor the supply of HERO warning signs and order as necessary.

(5) Review RADHAZ requirements and request HERO surveys when required.

(6) Coordinate with U. S. Coast Guard local district authorities regarding Notice To Mariner issues outlined in reference (a), and other authority for navigation safety during ordnance operations at the piers, and entering/leaving port.

e. Frequency Manager

(1) The Frequency Manager shall be responsible for the analysis of transmitter and antenna parameters for planned alterations in NAVSTA Norfolk's existing configuration and shall advise the Commanding Officer on the HERO EMCON impact by the changes before executing the plan.

(2) Ensure that all mobile and portable radios under the cognizance of this command are affixed with HERO warning labels to identify safe separation distances prior to issue.

(3) Inform the Handling Command Ordnance Officer(s), ESO, HERO Officer, and the Safety Department when stationary communications transmitters or radar systems are relocated or new equipment is obtained. These changes should be submitted for HERO review in accordance with reference (d).

(4) Establish check-in procedures for owners of citizens band and other mobile radios and cellular telephones to familiarize operators with HERO.

(5) Approve/disapprove any request to operate amateur radio equipment at NAVSTA Norfolk.

f. Air Operation's Duty Officer (AODO)

(1) Will act as the central point for the setting and monitoring of HERO EMCON in Zones 4, 5, and 6 as outlined in reference (a). He/She will maintain a current list of commands and contact phone numbers for those activities impacted by HERO EMCOM in Zones 4, 5 and 6.

(2) Restrict aircraft on the flight lines from indiscriminately energizing any transmitters (communications, radar or electronic warfare equipment) during HERO EMCON.

(3) Ensure that taxiing/landing aircraft are informed when HERO conditions are set.

(4) Establish and maintain liaison with all tenant activities and resolve any conflicts in HERO requirements.

(5) Include HERO EMCON radio operating training as a qualification requirement for vehicle operators on the airfield and on board the air facility.

g. Port Operations Officer

(1) Will act as the central point for the setting and monitoring of HERO EMCON in Zones 1, 2, and 3 as outlined in reference (a). He/She will maintain a current list of names and contact phone number for those activities impacted by HERO EMCOM in Zones 1, 2, and 3.

(2) Establish and maintain liaison with all activities within assigned zones and resolve any conflicts in HERO requirements.

h. Safety Department. Shall act as a review authority to ensure compliance with applicable ordnance safety directives and HERO procedures as outlined herein. They shall also be responsible for notifying NAVSTA Norfolk personnel and visitors who have mobile transmitters, not to include cell phones, in their personal vehicles that transmission on NAVSTA will be permitted only with the written permission of the Commanding Officer.

i. Fire Department. In the event of an ordnance accident or incident, shall act as on-scene commander until such time as the situation has been resolved (i.e., explosive ordnance disposal (EOD) responds and the item is rendered safe, or the item is determined safe to transport).

j. Tenant commands and activities

(1) Shall be responsible for notifying the ESO and HERO Officer of any operation involving HERO SUSCEPTIBLE ORDNANCE or HERO UNSAFE ORDNANCE that would require the setting of a HERO CONDITION.

(2) Shall be responsible for ensuring HERO UNSAFE ORDNANCE is completely enclosed in metal containers during storage and during transfer between designated safe areas.

(3) Notify the ESO, the Frequency Manager, and the HERO Officer prior to installing or changing transmitters and antennas at NAVSTA Norfolk. Reference (d) must be submitted to NAVFAC MIDLANT and approved by Naval Ordnance Safety and Security Activity (NOSSA) prior to installation.

k. NAVFAC MIDLANT. Responsible for review and processing of reference (d) submitted by requesting activity.

6. Requirements. To ensure ordnance safety, precautions must be taken to limit EME's in and around ordnance handling areas. Enclosure (1) contains standard HERO precautions and Chapter 5 of reference (b) provides HERO requirements during ordnance operations.

a. When ordnance is being assembled, handled, or transported within the confines of the station, emissions from

various mobile and portable very high frequency (VHF) transmitters should be silenced or the HERO UNSAFE and HERO SUSCEPTIBLE ORDNANCE safe separation distances as provided in Appendix A of reference (a) or Chapter 2 of reference (b) should be maintained.

b. HERO UNSAFE or HERO SUSCEPTIBLE ORDNANCE cannot be moved, transported, or loaded at NAVSTA Norfolk except as specified by the Ordnance Officer, ESO, and the HERO Officer. Tables 1 and 2 in reference (a) provide specific HERO EMCON guidance for Naval Station Norfolk.

c. Other conditions necessitating deviations from the requirements outlined in reference (b) shall be reported to the Naval Ordnance Safety and Security Activity (NOSSA), Code N716, in accordance with reference (b).

d. The AODO and Port Operations Duty Officer (PODO) will be responsible for notifying the appropriate personnel of the setting of a HERO condition after normal working hours. In addition, the AODO and PODO will receive reports that the ordered condition is set and report those results to the NAVSTA OOD.

e. Officers and supervisors shall be responsible for notifying each operator of a government vehicle containing a mobile transmitter that the transmitter is not to be energized within the distances specified in enclosure (4).

f. Each mobile and portable transmitter shall be conspicuously marked (at the operator's location) with the appropriate distance taken from enclosure (4) and marked by a (RADHAZ) cautionary decal. The HERO Officer or Frequency Manager will provide cautionary decals.

g. Commands, contractors, and their representatives will coordinate frequency assignment matters through appropriate DON Area Frequency Coordinator and Naval Station Norfolk Frequency Manager.

7. Procedures

a. The following general procedures apply when setting HERO EMCON at Naval Station Norfolk:

(1) In the event of an ordnance accident involving an ordnance carrier along the ordnance transportation route, the appropriate HERO UNSAFE ORDNANCE condition defined in enclosures (3) and (4) will be set by the ESO, HERO Officer, or CDO and will remain in effect until EOD personnel have completed a Render Safe Procedure (RSP) or determined that EMCON is no longer required (i.e., the ordnance is safe to transport).

(2) The ESO, HERO Officer, or CDO will notify all ordnance accident response units to maintain a minimum separation distance of 150 feet from the accident site when three VHF mobile radios are in use, and 50 feet when three portable radios are in use.

(3) For HERO SUSCEPTIBLE ORDNANCE, the HERO Officer or CDO will be notified 24 hours prior to routine implementation of a HERO CONDITION by the station's ordnance personnel. The commencement time and automatic expiration time will require a minimum of 30 minutes notice by the using activity.

(4) In all instances, the HERO Officer will contact all activities impacted by HERO (e.g., stationary transmitters to be silenced) and inform all ships and small craft in port (or new arrivals) to discontinue the use of communications transmitters operating in the 1.5 to 400 MHz frequency range, air/surface search radars, and microwave systems unless specifically exempt in reference (a).

b. The following EMERGENCY CONDITIONS apply when handling ordnance at NAVSTA Norfolk:

(1) An EMERGENCY CONDITION exists when ordnance that contains EID's with unknown HERO characteristics, or ordnance known to be HERO UNSAFE, HERO SUSCEPTIBLE, or HERO SAFE, has been involved in a mishap that causes the condition of the ordnance to be in question.

(2) In the event of an EMERGENCY CONDITION, suspect ordnance will be classified as HERO UNSAFE and the appropriate HERO CONDITION for the affected zone will be set in accordance with enclosure (2).

(3) The HERO Officer or CDO will notify appropriate commands/personnel of the prescribed HERO CONDITION.

(4) The ESO in conjunction with EOD personnel will determine when the suspect ordnance is HERO SAFE and control the power-up of transmitter/antenna systems.

8. General HERO Requirements

a. The following requirements apply to all ordnance operations at NAVSTA Norfolk involving the presence, handling, and loading/off-loading of ordnance, unless otherwise specified in NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010.

(1) Ordnance evolutions must be planned so that there is a minimum of ordnance exposure to the EME's.

(2) Avoid touching any exposed firing contact, wiring, or other exposed circuitry with any part of the body or with any metallic object.

(3) Ensure all open electrical connectors on the ordnance are covered with non-shorting caps.

(4) Ordnance will not be assembled/disassembled in an EME.

(5) Ignitors, primers, detonators, and other items containing electrically initiated devices (EIDs) will not be stowed in magazines that have flexible waveguides routed through them.

b. Transport and store HERO UNSAFE ORDNANCE in sealed, all-metal containers.

c. When transporting HERO SUSCEPTIBLE ORDNANCE, comply with the ordnance handling requirements listed in reference (a) and Chapter 5 of reference (b).

d. Observe the HERO separation distances listed in enclosure (4) for transmitters on aircraft.

e. Ensure ships berthed at the station silence all shipboard emitters whenever ordnance operations occur within the HERO separation distances listed in Appendix A of their respective report, or Chapter 2 of reference (b).

f. Observe the HERO separation distances listed in enclosure (4), or Chapter 2 of reference (b), for cellular telephones and mobile and portable radios, and affix HERO warning labels stating separation distances for HERO UNSAFE and HERO SUSCEPTIBLE ORDNANCE to each unit.

g. For transmitters and ordnance not specifically addressed in this instruction, see reference (b) for HERO guidance.

h. Prior to conducting geophysical surveys for unexploded ordnance (UXO) using equipment with electromagnetic transmitting detection/location (ground-penetrating radar, ground conductivity meters, etc.) systems, contact NOSSA, Code N716, for HERO safety guidance.

i. Ensure that ordnance accident response units (Fire, Ordnance, EOD, and Security personnel) maintain a minimum separation distance of 150 feet from the accident site when three or more VHF mobile radios are in use, and 50 feet when three or more portable radios are in use. For single radio use, see the applicable separation distances listed in enclosure (4).

9. General Restrictions of Radiation at NAVSTA Norfolk

a. Emissions from radar antenna, High Frequency (HF) communication equipment (2 to 32 MHZ) and, to a lesser extent, transmissions in other communication frequencies, give rise to serious RADHAZ problems. Therefore, the following restrictions are imposed on all departments, tenant commands and transient activities and ships/submarines:

(1) Commands must notify and receive permission from COMNAVBASE SOPA ADMIN NORFOLK SUBAREA VA, in accordance with SOPA Admin Manual 5400.1F, Art. 2000.16.

(2) Maintenance will be conducted on ships radars by use of dummy loads when possible.

(3) If a particular radar has no dummy load capability, if it is necessary for maintenance or repair purposes to radiate the radar on the ground, the following will be followed:

(a) If available, an energy absorption screen will be used.

(b) The radar will be radiated in a section directed toward an uninhabited area. The Elizabeth River area is preferred.

(c) If use of such sector scanning is not possible, a rotation of 360 degrees radiation will be used. No fixed beam radiation will be conducted in any direction.

(d) Appropriate warning signs will be posted whenever radiation is occurring.

(e) No radiation will be conducted within 2000 feet of any fueling or defueling operations and ordnance handling, storage area even if the ordnance is HERO safe.

b. Ground Communications Transmitters. Any department or tenant facility that desires to install a fixed or mobile radio communications unit must submit an application, in accordance with reference (d), through Public Works and the HERO Officer to the ESO.

(1) It is the policy of this station to avoid all HF transmissions because of the RADHAZ consequences. Therefore, permission from the Commanding Officer to establish or use fixed or mobile HF transmitters will be withheld unless a serious need can be established and it can be shown that the installation will not constitute a hazard.

(2) Any HF transmitting facility aboard this station will ensure that the Ordnance Officer has a telephone number where the operator of the unit may immediately be contacted in case of frequency interference.

c. Private Amateur Radio. Any person operating an amateur radio station must be cognizant of this instruction, reference (e), and all other pertinent requirements. A current telephone number where the operator may be reached will be kept by Public Works. Any person operating a radio set will keep vigilant to avert any ordnance hazard.

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Distribution: (NAVSTANORVAINST 5215.3N)
List I, II